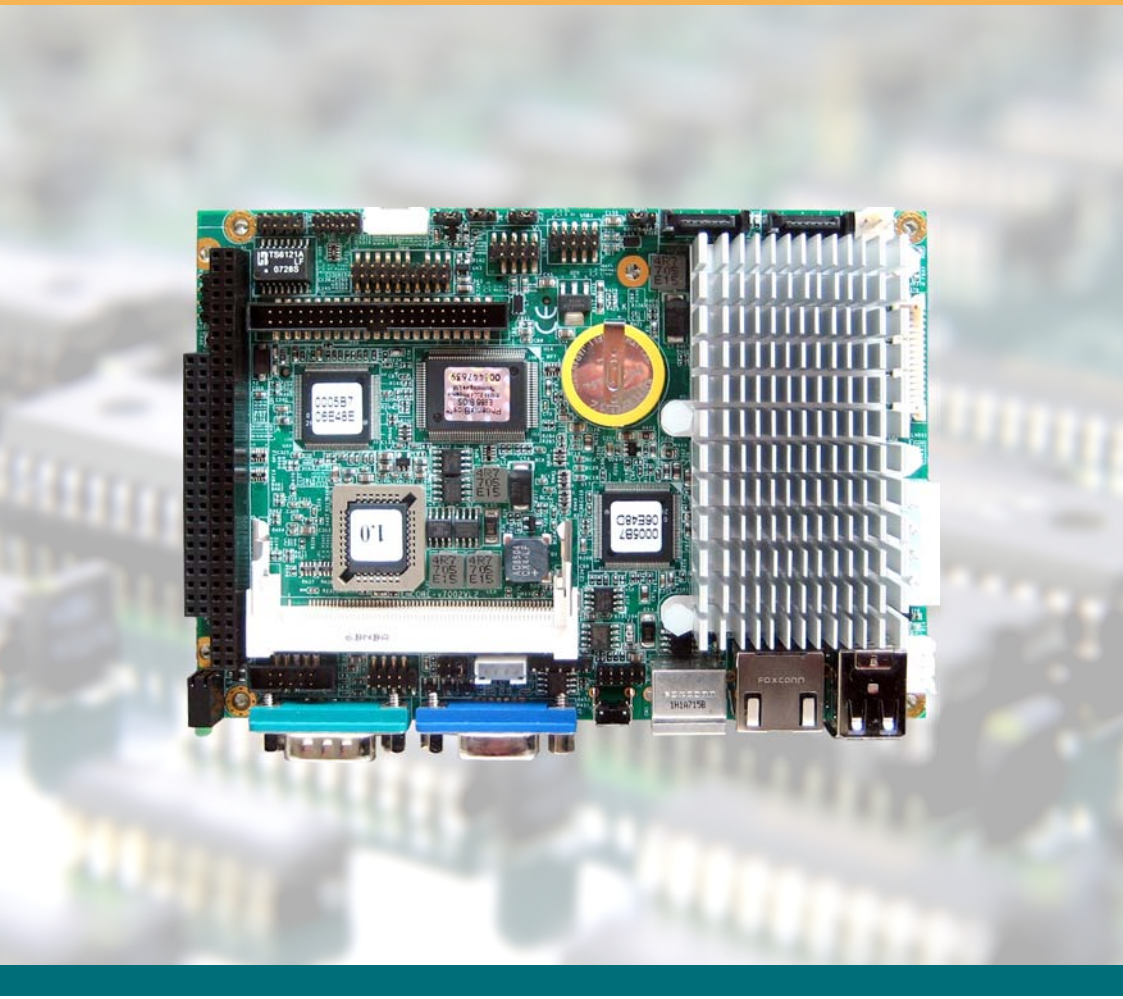

User's Manual

EmCORE-v7002

VIA Eden 3.5" Embedded Board

User's Manual

Version 1.0

2008.04

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Chapter 1

Introduction

1.1 Copyright Notice

All Rights Reserved.
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1.2 About this User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

1.3 Warning

Embedded Miniboard and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :
1.Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system.

1.4 Replacing the lithium battery

Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer. Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local requlations concerning special waste.

1.5 Technical Support

If you have any technical difficulites, please consult the user's manual first at:
ftp://ftp.arbor.com.tw/pub/manual

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.
http://www.arbor.com.tw
E-mail:info@arbor.com.tw

1.6 Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party. Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantibility and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights. Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

1.7 Packing List

Before you begin installing your single board computer, please make sure that the following materials have been shipped:

	1 x EmCORE-v7002VL2 3.5" Embedded Board
	1 x Quick Installation Guide
	1 x CD-ROM (for Driver used)
	1 x Single Warranty Card
	2 x RJ45 Cover

1.8 Cable Kit

EmCORE-v7002VL2 (Standard Version) Cable Kit (6911170020000P) contains the followings:

Content

1. 1 x AUDIO Cable
2. 2 x USB Cable
3. 1 x COM Flat Cable
4. 1 x Serial ATA Cable
5. 1 x IDE Cable
6. 1 x Print Cable
7. 1 x RJ-45 Ethernet LAN Cable
8. 1 x K/B-M/S Cable
9. 1 x FDD to LPT Cable

1.9 Ordering Information

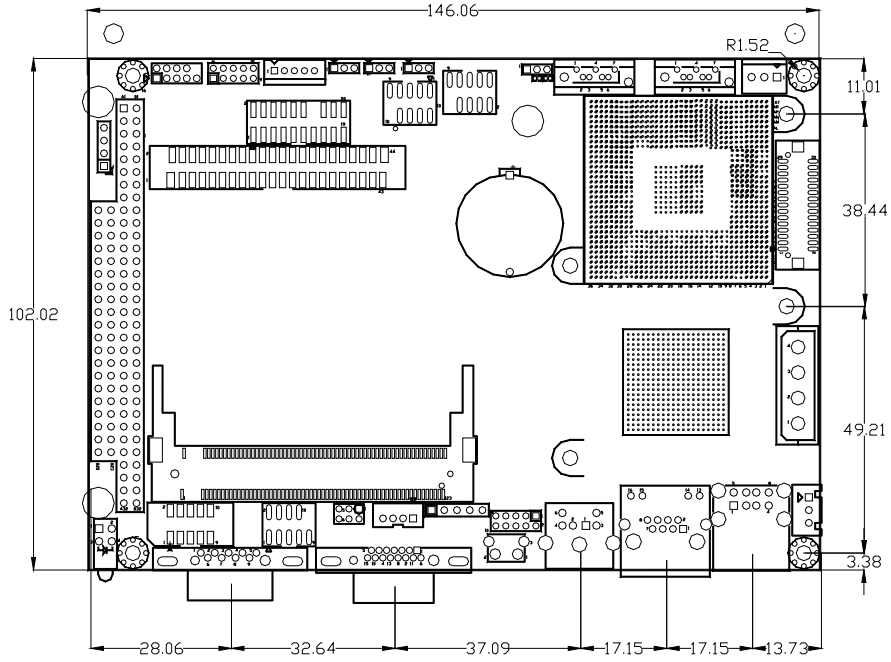
EmCORE-v7002VL2	3.5" Embeded Board With CPU, LAN, Audio, VGA, PC/104, SATA
配件包	CBK-11-7002-00

NOTE:
BOX header version and all other specifications are available up on OEM request.

1.10 Specification

Product Name	EmCORE-v7002
Form Factor	3.5" Embedded Board Size (145mm x 102mm)
Processor	VIA Fanless Eden 1GHz (FSB400); Max. Power 5W
Chipset	VIA CX700 + ITE8888G
System Memory	Support 1 x 200Pin DDR2 SDRAM SO-DIMM
	Socket Up to 1GB
VGA/LCD Controller	Integrated UniChrome Pro II 3D/2D Controller,
	support CRT up to 2048x1536@75Hz
	Integrated 18/24 bit Dual Channel LVDS
Ethernet	2x VIA VT6107 10/100 Base-T Ethernet LAN
	(support LAN boot)
I/O Chips	WINBOUND W83697HG
BIOS	Phoenix-Award BIOS version 6.0PG,
	Support 4MB Flash ROM
Audio	VIA VT1708A HD audio; Supports MIC-In/
	Line-In/ Line-out
IDE Interface	SATAII x 2 with 300MB/s transfer rate
	(Support 2 SATA devices)
	ATA-133 x 1 channel (Support 2 ATAPI devices)
	Compact Flash Disk X 1 (Share IDE1 Slave;
	Support up to 4GB)
Serial Port	COM 1: RS-232 (5V power pin support)
	COM 2: RS232/422/485 Select
Parallel Port	Parallel Port Supports SPP/ EPP/ ECP mode
	select by BIOS setting
K/B and Mouse	Support Standard PS/2 K/B and Mouse
Universal Serial Bus	6 x USB 2.0 Ports
Expansion Interface	Mini PCI Socket x 1 and 1x PC104 interface
Watchdog Timer	1~255 Level (sec or min)
Digital I/O	4in / 4out
Hardware Monitor Chip	Integrated in W83697HG
RTC	Support Real Time Clock
Power Connector	4 Pin Power Connector and (ATX function
	support); signal power can be use
Operation Temp.	0 ~ 60°C
Dimension (L x W):	145 x 102mm (5.7" x 4")

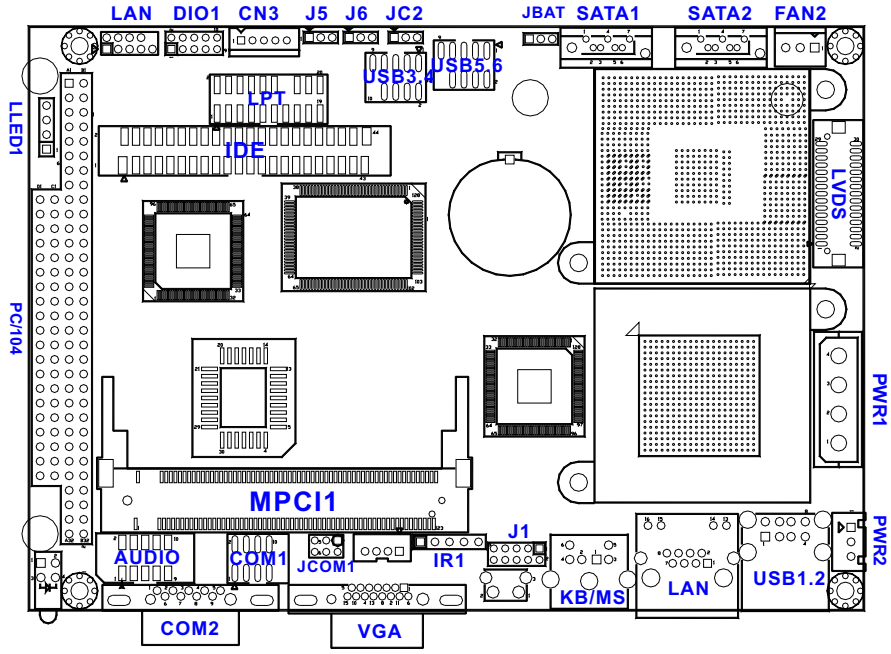
1.11 Board Dimensions



Chapter 2

Installation

2.1 Board layout



2.2 Jumpers and Connectors

Jumpers Setting

Label	Function
JBAT1	CMOS Jumper Settings
	Clear CMOS
JP1	COM1 RS-232 / 422 / 485 Select
JC2	LCD Power Select
J5	AT/ATX Power Select
J6	CF Card Master or Slave Select

JBAT1: CMOS Jumper Settings

Type: onboard 3-pin header

CMOS Setup (JBAT1)	JBAT1
Keep CMOS	1-2 ON
Clear CMOS	2-3 ON

Default setting: Keep CMOS

JP1: COM1 RS-232 / 422 / 485 Select

Type: onboard 6-pin (2*3) header

JRS1 Select	1-2	3-4	5-6
RS-232	ON	OFF	OFF
RS-422	OFF	ON	OFF
RS-485	OFF	OFF	ON

Default setting: RS-232 mode

JC2: LCD Power Select

Type: onboard 1*3-pin header

LCD Power	JC2
+5V	1-2
+3.3V	2-3

Default setting: +3.3V

JC2

J5: AT/ATX Power Select

Type: onboard 1*3-pin header

Power	J5
ATX	1-2
AT	2-3

Default setting: ATX

J5

J6: CF Card Master or Slave Select

Type: onboard 1*3-pin header

Power	J6
Slave	1-2
Master	2-3

Default setting: Slave

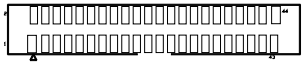
J6

Connectors

Label	Function
IDE1	Primary IDE Connector
FAN2	Fan connector
COM1	Serial Port 1
JCOM1	RS-422 / 485 Output
J1	Front Panel (Switches and Indicators)
LPT1	Parallel Port
USB2	USB 3/4 Connector
USB3	USB 5/6 Connector
PWR1	Power Connecter
PWR2	Power Connecter
LVDS1	LVDS LCD Panel Connector
IR1	Infrared (IR) Connector
LAN1	Ethernet Connector
LLED1	LAN LED Connector
AUDIO1	Audio Interface Port
CN3	LCD Inverter Connector
CFD1	Compact Flash Socket
PC104	PC104 for ISA Interface
MPCI1	Mini PCI Slot

IDE1 : Enhanced IDE Connector

Type: onboard 40-pin 2.54mm box headers



Pin	Description	Pin	Description
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	NC1
21	HD_DREQ	22	GND
23	HD_IOW	24	GND
25	HD_IOR	26	GND
27	HD_RDY	28	NC2
29	HD_DACK	30	GND
31	IRQ	32	NC3
33	ADDR1	34	NC4
35	ADDR0	36	ADDR2
37	HD_CS0	38	HD_CS1
39	HD_ACT	40	GND

FAN2 : FAN Connector

Type: onboard 3-pin wafer connector

Pin	Description
1	GND
2	+12V
3	Fan_Detect

COM1 : Serial Port

Type: onboard 2*5-pin header connector

Pin	Description	Pin	Description
1	DCD	2	RX
3	TX	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

COM1

JCOM1 : RS422/485 Output Connector

Type: onboard 2.0pitch 4-pin header

Pin	Description
1	RS485RTX+
2	RS485RTX-
3	RS422RX+
4	RS422RX-

JCOM1

J1 : Front Panel

Type: onboard 2.0pitch 10-pin (2*5) header

Pin	Description	Pin	Description
1	RESET +	1	RESET -
3	Power LED+	3	Power LED-
5	HD LED+	5	HD LED-
7	Speak+	7	Speak-
9	PWR-BON+	9	PWR-BON-

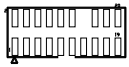
J1

Parallel Port (LPT1)

Type: onboard 2*10-pin HEADER(2.0mm)

Pin	Description	Pin	Description
1	#STB	2	P_AFD
3	PDR0	4	P_ERR
5	PDR1	6	P_INIT
7	PDR2	8	P_SLIN
9	PDR3	10	GND
11	PDR4	12	GND
13	PDR5	14	NC
15	PDR6	16	P_BUSY
17	PDR7	18	P_PE
19	P_ACK	20	P_SLCT

LPT



USB3,4: USB Connector

Type: onboard 2.0pitch 10-pin header for two USB ports

Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD3-	4	USBD4-
5	USBD3+	6	USBD4+
7	GND	8	GND
9	GND	10	N.C

USB3.4

USB5,6 : USB Connector

Type: onboard 2.0pitch 10-pin header for two USB ports

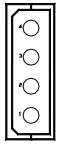
Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD5-	4	USBD6-
5	USBD5+	6	USBD6+
7	GND	8	GND
9	GND	10	N.C

USB5.6

PWR1 : Power Connector

Type : onboard 1*4-pin connector

Pin	Description
1	+5V
2	GND
3	GND
4	+12V



PWR1

PWR2 : Power Connector

Type : onboard 1*3-pin connector

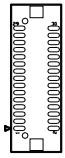
Pin	Description
1	PS_ON
2	GND
3	5VSB

PWR2

LVDS1 : LVDS LCD Connector

Type: onboard DF13 30-pin header

Pin	Description	Pin	Description
1	VPP	2	VPP
3	TX1CLK+	4	TX2CLK+
5	TX1CLK-	6	TX2CLK-
7	GND	8	GND
9	TX1O0+	10	TX2O0+
11	TX1O0-	12	TX2O0-
13	GND	14	GND
15	TX1O1+	16	TX2O1+
17	TX1O1-	18	TX2O1-
19	GND	20	GND
21	TX1O2+	22	TX2O2+
23	TX1O2-	24	TX2O2-
25	GND	26	GND
27	TX1O3+	28	TX2O3+
29	TX1O3-	30	TX2O3-



LVDS1

IR1: Infrared (IR) Connector

Type: onboard 2.54pitch 5-pin header

Pin	Description
1	+5V
2	N.C
3	IRRX
4	GND
5	IRTX

LAN1 : Ethernet Connector

Type: onboard 2.54pitch 10-pin header

Pin	Description	Pin	Description
1	TX+	2	TX-
2	RX+	4	D2+
3	D2-	6	RX-
4	D3+	8	D3-
5	LAN_GND	10	Key

LLED1 : LAN LED Indicator

Type :onboard 1*4pin 2.54mm header

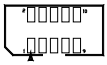
Pin	Description
1	ACT-
2	ACT+
3	LILED-
4	LILED+

Audio1 : Audio Port

Type: onboard 2*5pin 2.0mm BOX header

Pin	Description	Pin	Description
1	LINL	2	LINR
2	GND	4	GND
3	MIC1	6	MIC2
4	GND	8	GND
5	LOUT_L	10	LOUT_R

AUDIO



CN3 : LVDS Panel Inverter Connector

Type: onboard 5-pin wafer

Pin	Description
1	Vin
2	GND1
3	On/Off
4	Brightness
5	GND2

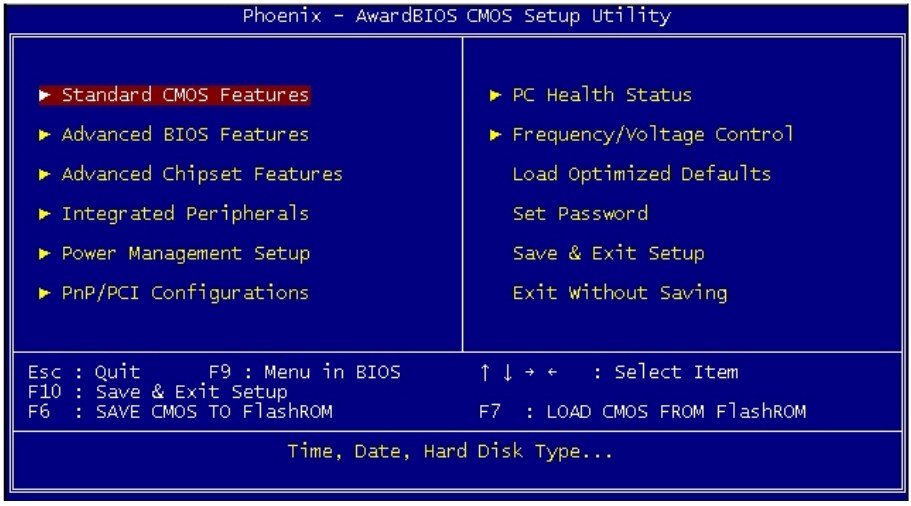
CN3

Chapter 3

BIOS

3.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system. The BIOS provides for a standard device such as disk drives, serial ports and parallel ports. It also adds password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.


Phoenix - AwardBIOS CMOS Setup Utility
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management Setup
► PnP/PCI Configurations
► PC Health Status
► Frequency/Voltage Control
Load Optimized Defaults
Set Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS
F10 : Save & Exit Setup
F6 : SAVE CMOS TO FlashROM
↑ ↓ → ← : Select Item
F7 : LOAD CMOS FROM FlashROM
Time, Date, Hard Disk Type...

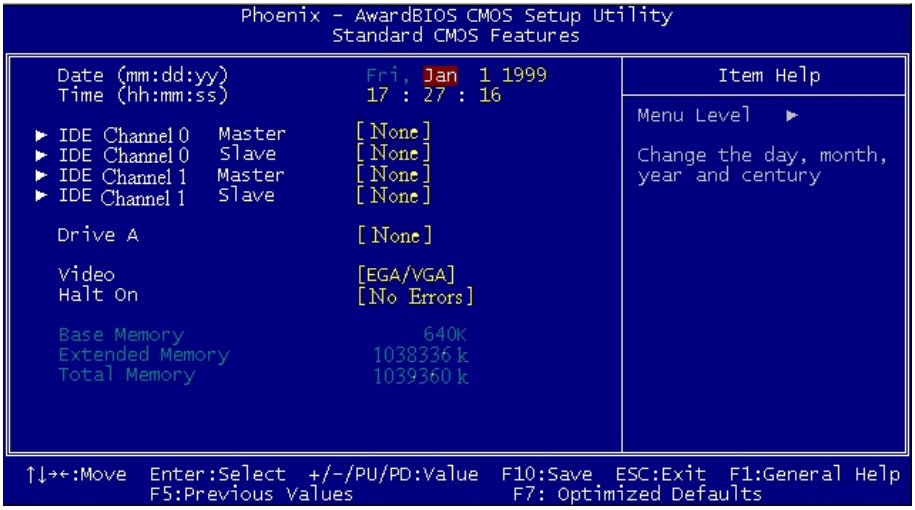
3.2 BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the **<Del>** key immediately allows you to enter the Setup utility. If you a little bit late press the **<Del>** key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the **<Reset>** button or simultaneously pressing the **<Ctrl>**, **<Alt>** and **<Delete>** keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press **<DEL>** to Enter Setup

In general, you press the arrow keys of highlight items, **<Enter>** to select, the **<PgUp>** and **<PgDn>** keys to change entries, **<F1>** for help and **<Esc>** to quit. When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

3.3 Standard CMOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Fri, Jan 1 1999
Time (hh:mm:ss) 17 : 27 : 16
IDE Channel 0 Master [None]
IDE Channel 0 Slave [None]
IDE Channel 1 Master [None]
IDE Channel 1 Slave [None]
Drive A [None]
Video [EGA/VGA]
Halt On [No Errors]
Base Memory 640K
Extended Memory 1038336 k
Total Memory 1039360 k
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

"Standard CMOS Features" allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the CPU card is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, shch as onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Date

The date format is: **Day :** Sun to Sat
Month : 1 to 12
Date : 1 to 31
Year : 1999 to 2099

Time

The time format is: **Hour :** 00 to 23
Minute : 00 to 59
Second : 00 to 59

To set the date & time, highlight the "Date" & "Time" and use the **<PgUp>**/ **<PgDn>** or **+/-** keys to set the current time.

IDE Channel 0 HDDs / IDE Channel 1 HDDs >>>

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave". Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select "Manual" to define the drive information manually. You will be asked to enter the following items.

Cylinder: Number of cylinders
Head: Number of read/write heads
Precomp: Write precompensation
Landing Zone: Landing zone
Sector: Number of sectors

The Access Mode selections are as follows:

CHS (HD < 528MB)
LBA (HD > 528MB and supports Logical Block Addressing)
Large (for MS-DOS only)
Auto

Drive A

It identifies the type of floppy disk drive A that has been installed in the computer. On this board floppy is not included. So select It None.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

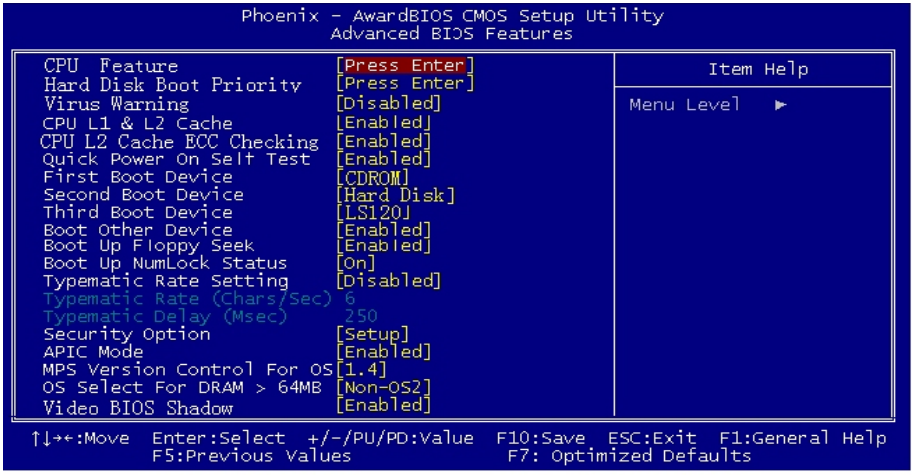
EGA/VGA For EGA, VGA, SEGA, SVGA or PGA monitor adapters.(default)
CGA 40 Power up in 40 column mode.
CGA 80 Power up in 80 column mode.
MONO For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors (default)	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

3.4 Advance BIOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
CPU Feature [Press Enter]
Hard Disk Boot Priority [Press Enter]
Virus Warning [Disabled]
CPU L1 & L2 Cache [Enabled]
CPU L2 Cache ECC Checking [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Typematic Rate Setting [Disabled]
Typematic Rate (Chars/Sec) 6
Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAM > 64MB [Non-OS2]
Video BIOS Shadow [Enabled]
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Use this menu you can set Advanced Feture available on your system .

CPU Features

If you want to Control the CPU Feature ,please press Enter. In this item you can control CPU thermal. Some times this item setting by designer and you can`t change the default setting.

Hard Disk Boot Priority

Select hard disk boot Devices Priority. if you Press enter, you can use (↑) or (↓) to select a device, then press (+) to move it up or (-) to move it down the list, Press [ESC] to exit this menu.

Virus warning

Allows you to choose the VIRUS warning features for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area ,BIOS will show a warning message on screen and alarm beep.
Setting: Disabled (default), Enabled.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all,
Setting: Enabled (default), Disabled.

CPU L2 Cache ECC Checking

Allows the L2 ECC checking when boot
Setting: Enabled(default), Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.
Setting: Enabled (default), Disabled.

First & Second Boot Device

The BIOS attempts to load the operating system first from the devices in the sequence selected in these items. The choices are : Floppy, LS120, HDD, SCSI, CDROM, Disabled and others.
Setting: First Boot Device CDROM (default)
Second Boot Device HDD (default)

Third Boot Device
These fields determine the third boot devices of the system. The options a vailable include Setting: Floppy, HDD-0, SCSI, CDROM, HDD-1, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.
Setting: LS120 (default)

Boot Other Device
It allows the system to search for an OS from other devices other than the ones selected in the First/ Second/ Third Boot Device.
Setting: Enabled (Default), Disabled.

Boot Up Floppy Seek
Seeks floppy disk drives during boot up. Disabling speeds boot up.
Setting: Enabled (Default), Disabled.

Boot Up NumLock Status
It allows you to activate the NumLock function after you power up the system.
Setting: On (Default), Off.

Typematic Rate Setting
Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.
Setting: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)
When typematic is enabled, this option determined typematic rate.

Typematic Delay (Msec)
When typematic is enabled, this option determined typematic delay time.

Security Option
It allows you to limit access to the System and Setup. When you select System, the system prompts for the User Password every time you boot up. When you select Setup, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.
Setting: Setup (Default), System.

Mps Version Control For OS

In this field you can choose the multiprocessins system`s version. there are two options.one is v1.1 another is v1.4.
Setting: 1.1,1.4 (default).

OS Select For DRAM 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.
Setting: Non-OS2 (default), OS2.

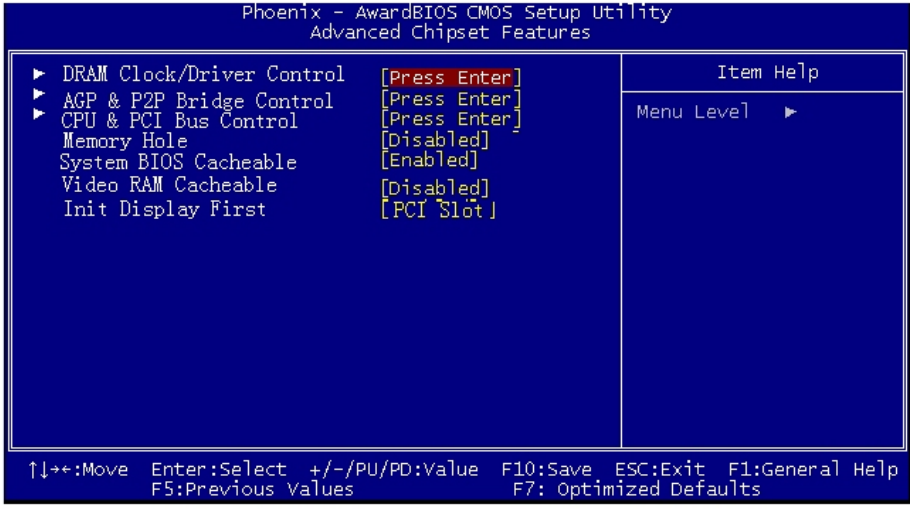
Vedio BIOS shadow

Enable copies Video BIOS to shadow RAM Improves performance.
Setting: Enabled (default), disabled.

Small Logo (EPA) Show

In this field you can select Enabled or Disabled to whether show small logo
Setting: Enabled (default), disabled.

3.5 Advanced Chipset Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Clock/Driver Control [Press Enter]
AGP & P2P Bridge Control [Press Enter]
CPU & PCI Bus Control [Press Enter]
Memory Hole [Disabled]
System BIOS Cacheable [Enabled]
Video RAM Cacheable [Disabled]
Init Display First [PCI Slot]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

DRAM Timing Selectable
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on DRAM timing.
Setting: By SPD (default), Manual.

CAS Latency Time
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

Active to Precharge Delay
Delay that results when two different rows in a memory chip are addressed one after another. Do not reset this field from the default value specified by the system designer.

DRAM RAS# to CAS# Delay
When RAS is asserted, there must be a small wait before the CAS can be pulled. This setting controls length of the wait. Like CAS latency, it's a delay before you get your data, so while your system is faster at a lower setting, it's also more stressful at that setting. Your RAM may handle it, or it may not. Do not reset this field from the default value specified by the system designer.

DRAM RAS# Precharge
The third part of the x-y-z notation used in SDRAM, the other two being CAS and RAS to CAS. Like its brethren, it's better lower but also more stressful lower. See the pattern 2.5 is only available with DDR. Do not reset this field from the default value specified by the system designer.

DRAM Data Integrity Mode
This BIOS feature controls the ECC feature of the memory controller.
Setting: Non-ECC (default), ECC.

MGM Core Frequency
This field allows you to select the Frequency of MGM core.
Setting: Max 266MB HZ (default).

System BIOS Cacheable
Allows the system BIOS to be cached for faster system performance.
Setting: Enabled (default), Disabled.

Video BIOS Cacheable
This item allows you to "Enabled" or "Disabled" on Video BIOS Cacheable.
Setting: Enabled (default), Disabled.

Memory Hole At 15M-16M
In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.
Setting: Disabled (Default), Enabled.

Delayed Transcaction
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1

Delay Prior to Thermal
Controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. For example, with the default value of 16 Minutes, the BIOS activates the Thermal Monitor in automatic mode 16 minutes after the system starts booting up

AGP Aperture Size(MB)
Options : 4, 8, 16, 32, 64, 128, 256
This option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space.Host cycles that hit the aperture range are forwarded to the AGP without need for translation. This size also determines the maximum amount of system RAM that can be allocated to the graphics card for texture storage. AGP Aperture size is set by the formula : maximum usable AGP memory size x 2 plus 12MB. That means that usable AGP memory size is less than half of the AGP aperture size. That's because the system needs AGP

memory (uncached) plus an equal amount of write combined memory area and an additional 12MB for virtual addressing. This is address space, not physical memory used. The physical memory is allocated and released as needed only when Direct3D makes a "create non-local surface" call.

☆☆on-chip VGA Setting☆☆

This field from the default value specified by the system designer.

on-chip VGA

If your system contains a VGA controller and you want to activate it, select Enabled. The next option will become available.
Setting: Enabled (default), Disabled.

On-chip Frame Buffer Size

The On-Chip Frame Buffer Size can be set to 1MB、4MB、8MB、16MB、32MB. memory is shared with system memory. The default value is 8MB.

Boot Display

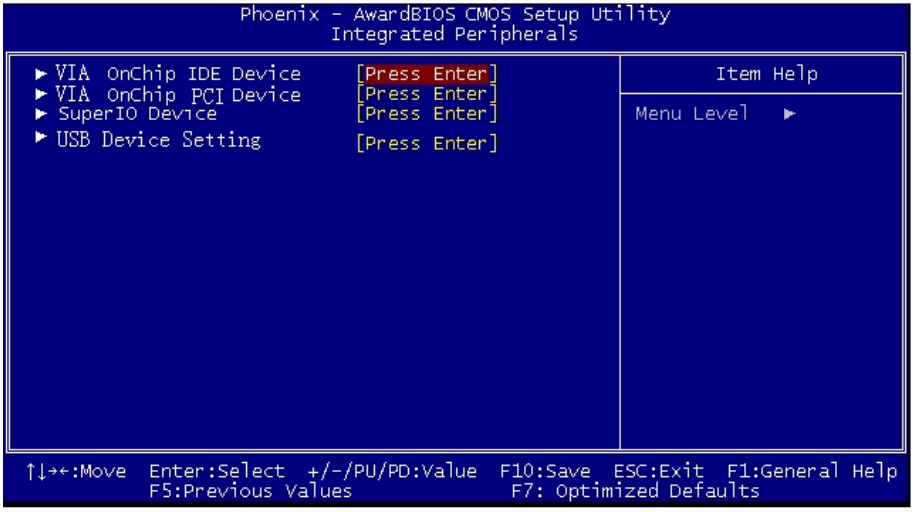
This option let you select the display devices. The options include VBIOS Default、CRT、LFP、CRT+LFP
Setting: CRT.

Panel Number

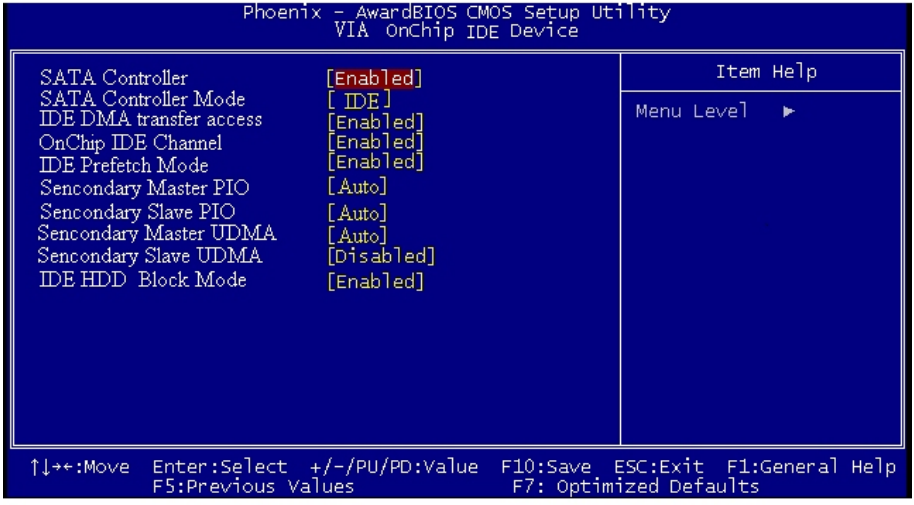
This option let you select the type of panel. The default value is 1024 x 768 24-bit.

3.6 Integrated Peripherals

In this menu you can specify your settings for integrated peripherals.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
▶ VIA OnChip IDE Device [Press Enter]
▶ VIA OnChip PCI Device [Press Enter]
▶ SuperIO Device [Press Enter]
▶ USB Device Setting [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

VIA OnChip IDE Device>>>


Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip IDE Device
SATA Controller [Enabled]
SATA Controller Mode [IDE]
IDE DMA transfer access [Enabled]
OnChip IDE Channel [Enabled]
IDE Prefetch Mode [Enabled]
Sencondary Master PIO [Auto]
Sencondary Slave PIO [Auto]
Sencondary Master UDMA [Auto]
Sencondary Slave UDMA [Disabled]
IDE HDD Block Mode [Enabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

SATA Controller
Select "Enabled" to activate SATA function or select "Disabled" disable SATA function
Setting: Enable (default), Disabled.

SATA Controller Mode
Please select SATA working mode for your system. two choices for your system, one is IDE monde, the other one is RIAD mode.
Setting: IDE (Default), RIAD.

IDE DMA transfer access
Enable or disable DMA mode for your system.
Setting: Enabled (Default), Disabled.

OnChip IDE channel 1
Select "Enabled" to activate each IDE channel separately, or select "Disabled" disable this function.
Setting: Enabled (default), Disabled.

IDE Prefetch Mode
If your system use ATA133 or SATA, please select: Enabled, It can improve the perfoamnce of your system.
Setting: Enabled (default), Disabled.

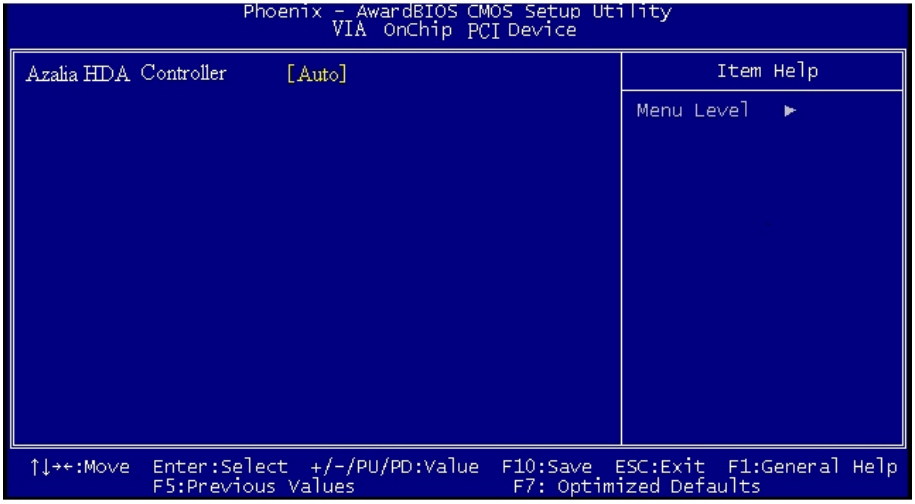
Secondary Master /Slave PIO
Programmed input/output configure. this mode just for early disk. if your disk working in this mode, the performance should be limited. please default setting for your system. use this configure, the system should auto detect whether use low performance PIO mode for slowly disk
Setting: Auto (Default)

Secondary Master /Slave UDMA
It allows your system to improve disk I/O throughput to 33MB/sec with the Ultra DMA33 feature.
Setting: Auto (Default), Disabled.

IDE HDD Block Mode

If you IDE hard drive supports block mode select Enable for automatic detection of the optimal number of block read/writes per sector the drive can support .
Setting: Enabled (default).

VIA OnChip PCI Device>>>


Phoenix - AwardBIOS CMOS Setup Utility
VIA OnChip PCI Device
Azalia HDA Controller [Auto]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Onboard FDC Controller

Select "Enabled" to activate USB Controller, Select "Disabled", if you want to disable USB Controller.
Setting: Enabled (default), Disabled.

Onboard Serial Port1/ Port2

It allows you to select the onboard serial ports with their

Addresses / Interrupt source
Setting: Serial Port 1 3F8/IRQ4 (Default)
Serial Port 2 2F8/IRQ3 (Default)

UART Mode Select

There are three options in this field. you can select the one of these options which you need.
Setting: normal (default)

RxD, TxD Active

You can select different Active levels for Rxd, Txd. The levels are shown by the follow table.

Rxd	Txd
Hi	Hi
Hi	Lo
Lo	Hi
Lo	Lo

Setting: Hi, Lo (default)

IR Transmission Delay

It allows you to select "Enabled" or "Disabled" to active or disable IR transmission Delay.
Setting: Enabled (default), Disabled.

UR2 Duplex Mode

Setting: Full, Half (Default).

Use IR Pins

Setting: RxD2, TxD2, IR-Rx2Tx2 (Default).

Onboard Parallel Port

It allows you to Enable the onboard parallel ports and and matching address for the serial ports . Select an address and corresponding interrupt for the parallel ports.
Setting: 378/IRQ7 (Default)

Parallel Port Mode

It allows you select different operation modes for parallel port. Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.
Setting: spp (default)

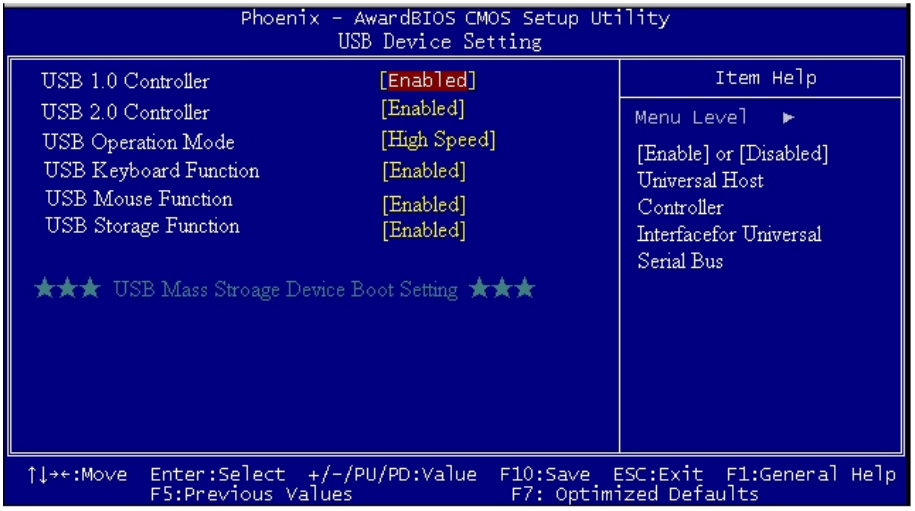
EPP mode select

You can use this feature to choose which version of EPP to use. For better performance, use EPP 1.9. But if you are facing connection issues, try setting it to EPP 1.7. Most of the time, EPP 1.9 will work perfectly well.
SettingL: EPP1.7 (default), :EPP1.9

ECP Mode Use DMA

By default, the parallel port uses DMA Channel 3 when it is in ECP mode. This works fine in most situations.
Setting: 3 (default), 1.

USB Device Setting>>>


Phoenix - AwardBIOS CMOS Setup Utility
USB Device Setting
USB 1.0 Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Operation Mode [High Speed]
USB Keyboard Function [Enabled]
USB Mouse Function [Enabled]
USB Storage Function [Enabled]
★★★ USB Mass Stroage Device Boot Setting ★★★
Item Help
Menu Level ►
[Enable] or [Disabled] Universal Host Controller Interfacefor Universal Serial Bus
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

USB 1.0 Controller
Enable or disable USB1.0 function
Setting: Enabled (default)

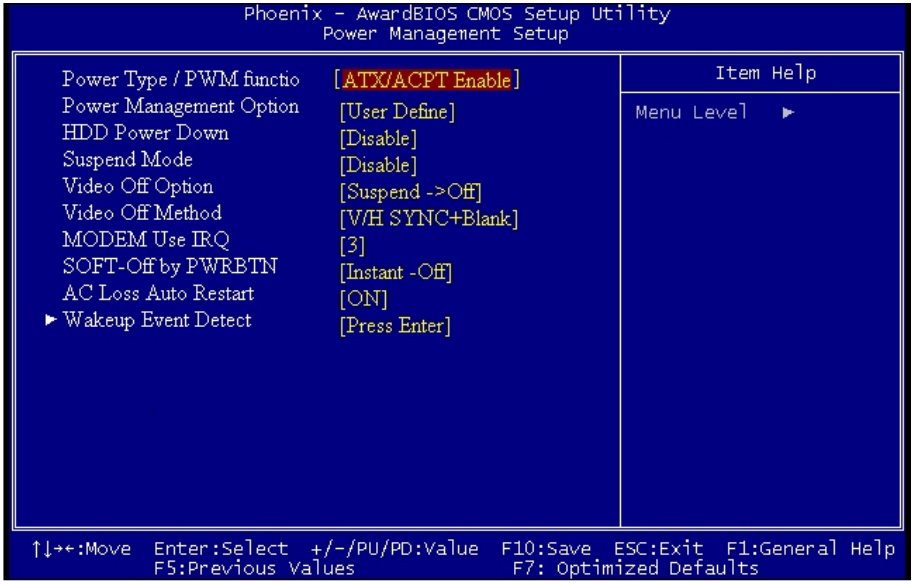
USB 2.0 Controller
Enable or disable USB1.0 function.
Setting: Enabled (default)

USB Operation Mode
Enable or disable USB2.0 function.
Setting: Enabled (default)

USB Keyboard /Mouse Function
Enable or disable USB keyboard/mouse function. If select enabled or disabled, you can use USB keyboard/mouse or not.
Setting: Enabled (default)

USB Storage Function
Enable or disable USB storage function.
Setting: Enabled (default)

3.7 Power Management Setup


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
Power Type / PWM functio [ATX/ACPT Enable]
Power Management Option [User Define]
HDD Power Down [Disable]
Suspend Mode [Disable]
Video Off Option [Suspend ->Off]
Video Off Method [V/H SYNC+Blank]
MODEM Use IRQ [3]
SOFT-Off by PWRBTN [Instant -Off]
AC Loss Auto Restart [ON]
Wakeup Event Detect [Press Enter]
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Power Type/PWM function

It supports ACPI (Advanced Configuration and Power Interface). If you system use ATX power supply and the OS up to windows 98.
Setting: ATX/ACPI (Default)

Power Management Option

It allows you to set the type of power saving management modes.
Setting: User Define (default)
Min Saving
Max Saving

HDD power down

It allows you to select the type of HDD working modes. Controls what causes the HDD power to be switched off. but just HDD to be switched, the other devices are working continuously.
Setting: Disable (default)

Suspend mode
It allows you to select the type of CPU working modes .If your system not activity for a long times(by your set),all of the devices could stop work except CPU.
Setting: Disable (default)

Video off Option
It allows you to select the type of video off modes. Controls what causes the display to be switched off.
Setting: suspend->off

Video off Method
It allows you to select the type of Video off modes. Controls what causes the display to be switched off
Setting: V/H SYNC+BLank(default)

DPSM support
Blank Screen

MODEM USE IRQ
It allows you to set the IRQ NO. for your system.
Setting: 3 (default)

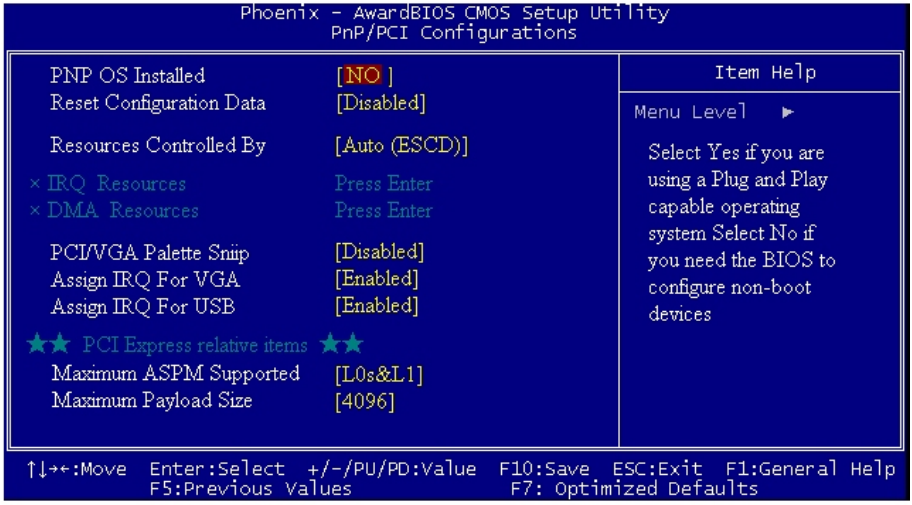
Soft-off by PWRBTN
It defines the power-off mode when using an ATX power supply. In the Instant Off mode, It allows powering off immediately upon pressing the power button.In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than 4 seconds or enters the suspend mode when pressed for less than 4 seconds.Setting: Instant-off (Default), Delay 4 Sec.
Setting: Instant-off (default)

AC Loss Auto Restart
If you AC power supply shut down thunderbolt, system can auto restart by your setting in this filed.
Seting: on (default)

Wake up event detect

This system can be wake up from suspend by some events. In this field you can configure you system whether detect any events to wake up your system.

3.8 PNP/PCI Configurations


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
PNP OS Installed [NO]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto (ESCD)]
× IRQ Resources Press Enter
× DMA Resources Press Enter
PCI/VGA Palette Sniip [Disabled]
Assign IRQ For VGA [Enabled]
Assign IRQ For USB [Enabled]
★★ PCI Express relative items ★★
Maximum ASPM Supported [L0s&L1]
Maximum Payload Size [4096]
Item Help
Menu Level ►
Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

PNP OS Installed

If you are using a Plug and Play capable operating system (like Windows9x), you can select Yes configure non-boot devices by PNP OS. if you select NO, the BIOS would configure non-boot devices.
Setting: Disabled (Default), Enabled.

Reset Configuration Data

If you have installed a new add-on devices an the system reconfiguturation has caused such a serious cnflict, you can select <Enable> to reset extended System Configuturation Data.
Setting: Disabled (Default), Enabled.

Resources Controlled By
This PnP BIOS can configure all of the boot and compatible devices with the use of a PnP operating system.
Setting: Auto(ESCD) (Default), Manual.

IRQ Resource
It allows you to configure the IRQ Resources. This selection set by the designer.

DMA Resources
It allows you to configure the IRQ Resources. This selection set by the designer.

PCI/VGA Palette Snoop
Some non-standard VGA display cards may not show colors properly. It allows you to set whether or not MPEG ISA/VESA VGA cards can display with PCI/VGA. When Enabled , a PCI/VGA can display with an MPEG ISA/VESAVGA card.When Disabled , a PCI/VGA cannot display with an MPEG ISA/VESAVGA card.
Setting: Disabled (Default), Enabled.

Assign IRQ For VGA
Assign IRQ resource for VGA ,you can Disable or Enable it.
Setting: Enabled (Default), Disabled.

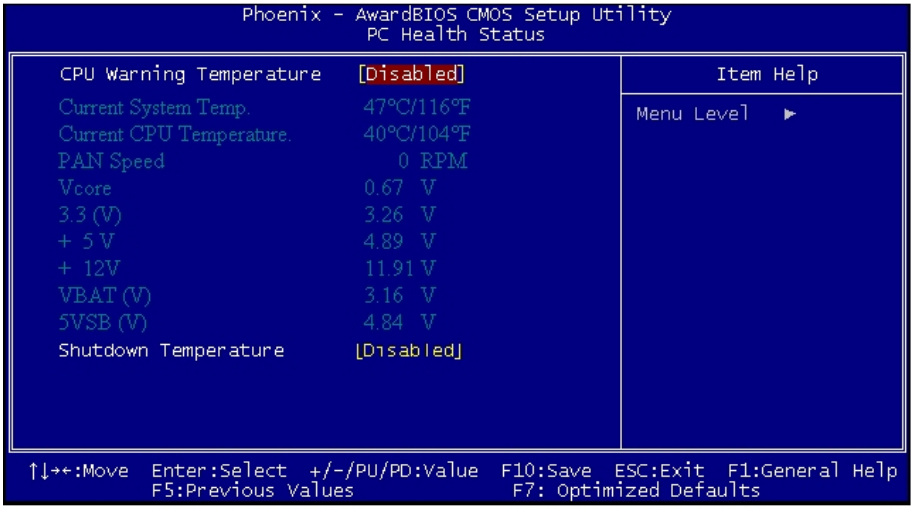
Assign IRQ For USB
Assign IRQ resource for USB device ,you can Disable or Enable it.
Setting: Enabled (Default), Disabled.

Maximum ASPM supported
Control maximum level of active state power management ASPM) supported on the given PCI Express links on the system. Usually, please do not rejigger the default setting.
Setting: L0s & L1 (default)

Maximum payload Size

In this field, you can configure the maximum payload size for your system.
Setting: 4096 (default)

3.9 PC Health Status


Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status
CPU Warning Temperature [Disabled]
Current System Temp. 47°C/116°F
Current CPU Temperature. 40°C/104°F
PAN Speed 0 RPM
Vcore 0.67 V
3.3 (V) 3.26 V
+ 5 V 4.89 V
+ 12V 11.91 V
VBAT (V) 3.16 V
5VSB (V) 4.84 V
Shutdown Temperature [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

This section show you CPU Health Status of system.

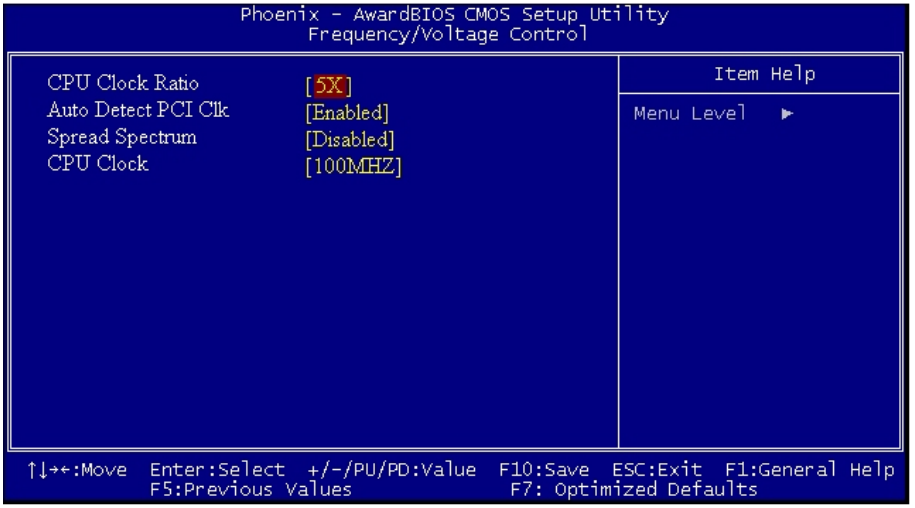
CPU Warning temperature

This item allows you to set up the CPU CPU Warning temperature.
Setting: Disabled (Default).

Shutdown Temperature

This item allows you to set up the CPU shutdown Temperature. This item only effective under windows 98 ACPI mode.
Setting: Disabled (Default).

3.10 Frequency/Voltage Control


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
CPU Clock Ratio [5X]
Auto Detect PCI Clk [Enabled]
Spread Spectrum [Disabled]
CPU Clock [100MHZ]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

CPU Clock Ratio

In this item, you can configure CPU Clock ratio. Please keep the default setting for your system if you do not know what the meaning of this item.
Setting: 5X (default)

Auto Detect PCI Clk

You can select Enabled or Disabled to enable or disable automatic detect PCI clock, please keep the default setting for your system if you do not know what the meaning of this item.
Setting: Enabled (Default), Disabled.

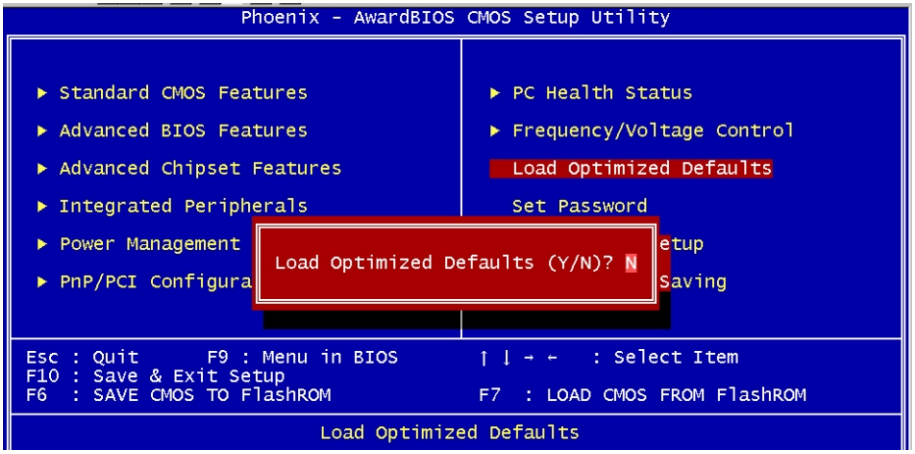
Speed Spectrum

You can select Enabled or Disabled to enable or disable. please keep the default setting for your system if you do not know what the meaning of this item.
Setting: Disabled (Default), Enabled.

CPU Clock

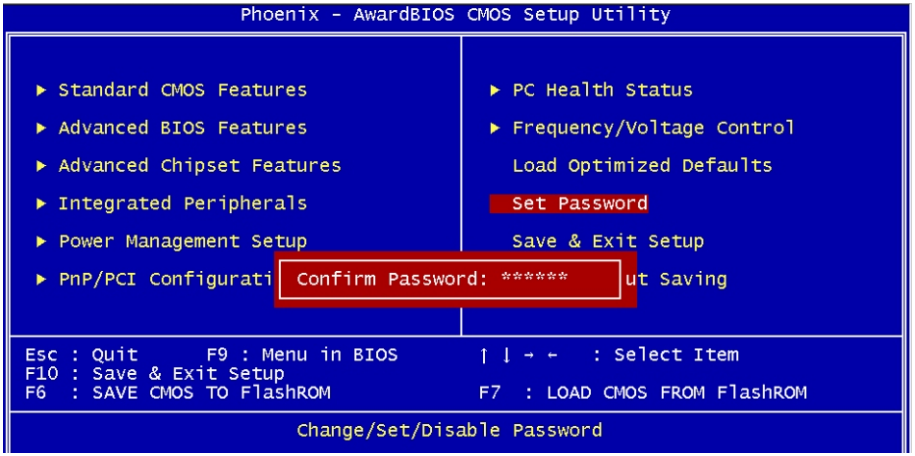
You can configure CPU clock for your system,the default value is 100MHz. Please keep the default setting for your system if you do not know what the meaning of this item.
Setting: 100MHz(default)

3.11 Load Optimized Defaults



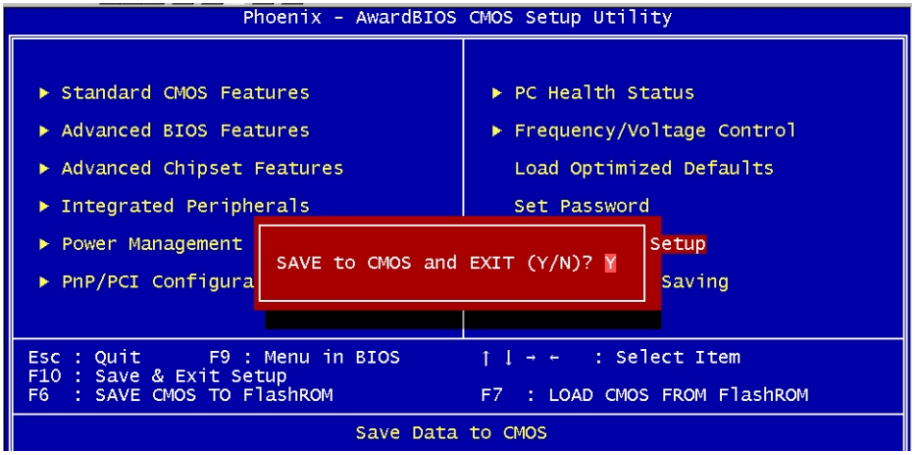
It allows you to load the default values to your system configuration. The default setting is optimal and enabled all high performance features.

3.12 Set Password



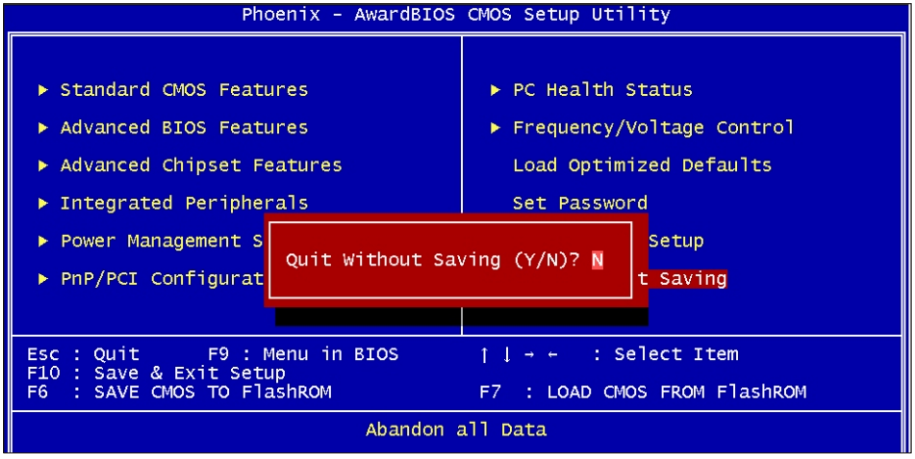
Useing Password to set a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. And the system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen. To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot, then you can enter BIOS Setup freely.

3.13 Save & Exit Setup



Typing "Y", you will quit the setup utility and save all the changes into the CMOS memory. Typing "N", you will return to Setup utility.

3.14 Exit Without Saving



Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.

3.15 BIOS memory mapping

Address	Device Description
00000h-9FFFFh	DOS Kernel Area
A0000h-BFFFFh	EGA and VGA Video Buffer (128KB)
C0000h-CFFFFh	EGA/VGA ROM
D0000h-DFFFFh	Adaptor ROM
E0000h-FFFFFh	System BIOS

3.16 Award BIOS Post Codes

The following codes are not displayed on the screen. They can only be viewed on the LED display of a so called POST card. The codes are listened in the same order as the according functions are executed at PC startup. If you have access to a POST Card reader, you can watch the system perform each test by the value that's displayed. If the system hangs (if there's a problem) the last value displayed will give you a good idea where and what went wrong, or what's bad on the system board.

CFh	Test CMOS read/write functionality
C0h	Early chipset initialization: Disable shadow RAM, L2 cache (socket 7 and below), program basic chipset registers
C1h	Detect memory: Auto detection of DRAM size, type and ECC, auto detection of L2 cache (socket 7 and below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01h	Expand the Xgroup codes located in physical memory address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch
04h	Reserved
05h	Blank out screen; Clear CMOS error flag
06h	Reserved
07h	Clear 8042 interface; Initialize 8042 self test
08h	Test special keyboard controller for Winbond 977 series Super I/O chips; Enable keyboard interface

09h	Reserved
0Ah	Disable PS/2 mouse interface (optional); Auto detect ports for keyboard & mouse followed by a port & interface swap (optional); Reset keyboard for Winbond 977 series Super I/O chips
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is read/write capable or not. If test fails, keep beeping the speaker
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash read/write codes into the run time area in F000 for ESCD & DMI support
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real time clock power status and then check for override
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved

23h	Check validity of RTC value; Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead; Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information; Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots; Early PCI initialization - Enumerate PCI busnumber, assign memory & I/O resource, search for a valid VGA device & VGA BIOS, and put it into C000:0
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address; Initialize the APIC for Pentium class CPU; Program early chipset according to CMOS setup; Measure CPU speed; Invoke video BIOS
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multilanguage; Put information on screen display, including Award title, CPU type, CPU speed, etc...
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254

3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1
3Fh	Reserved
40h	Test 9259 interrupt mask bits for channel 2
41h	Reserved
42h	Reserved
43h	Test 8259 functionality
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	Calculate total memory by testing the last double last word of each 64K page; Program writes allocation for AMD K5 CPU
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	Program MTRR of M1 CPU; initialize L2 cache for P6 class CPU & program cacheable range; Initialize the APIC for P6 class CPU; On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical
4Fh	reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	Display PnP logo; Early ISA PnP initialization and assign CSN to every ISA PnP device
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code
5Ah	Reserved

5Bh	Show message for entering AWDFLASH.EXE from FDD (optional feature)
5Ch	Reserved
5Dh	Initialize Init_Onboard_Super_IO switch; Initialize Init_Onboard_ AUDIO switch
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-Configuration table
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices; Auto assign ports to onboard COM ports if the corresponding item in Setup is set to AUTO
6Eh	Reserved
6Fh	Initialize floppy controller; Setup floppy related fields in 40:hardware
70h	Reserved
71h	Reserved
72h	Reserved
73h	Enter AWDFLASH.EXE if: AWDFLASH.EXE is found in floppy dive and ALT+F2 is pressed
74h	Reserved
75h	Detect and install all IDE devices: HDD, LS120, ZIP, CDROM...
76h	Reserved
77h	Detect serial ports and parallel ports
78h	Reserved
79h	Reserved

7Ah	Detect and install coprocessor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported: if err or soccur, report errors & wait for keys, if no errors occur or F1 key is pressed continue - Clear EPA or customization logo
80h	Reserved
81h	Reserved
82H	Call chipset power management hook: Recover the text fond usedby EPA logo (not for full screen logo), If password is set, ask for password
83H	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	Final USB initialization; NET PC: Build SYSID structure; Switch screen back to text mode; Set up ACPI table at top of memory; Invoke ISA adapter ROM's; Assign IRQ's to PCI devices; Initialize APM; Clear noise of IRQ's
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	Enable L2 cache; Program boot up speed; Chipset final initialization; Power management Final initialization; Clear screen and display summary table; Program K^ write allocation; Program P6 class write combining
95h	Program daylight saving; Update keyboard LED and typematic rate Build MP table; Build and update ESCD; Set CMOS century to 20h or 19h; Load CMOS time into DOS timer tick; Build MSIRQ routing
96h	table
Ffh	Boot attempt (INT 19h)

Chapter 4

Appendix

4.1 I/O Map

Item	Address	Description
1	0000h-0000Fh	Direct memory access controller
	0080h-009Fh	
	00C0h-00DFh	
2	0020h, 0021h	Programmable interrupt Controller
	00A0h, 00A1h	
3	0040h-0043h	System timer
	0044h-0047h	Keyboard controller
4	0060h-0064h	System CMOS/real time clock
5	0070h-0073h	Math Co-Processor
6	00F0h-00FFh	Primary IDE
7	01F0h-01F7h	ISAPNP Read Data Port
8	0274h-0277h	ISAPnP Configuration
9	0279h , 0A79h	SuperIO Configuration Port
10	0295h , 0296h	COM_2 (If use)
11	02F8h-02FFh	Parallel Port (If use)
12	0378h-037Ah	MDA/MGA
13	03B0h-03BFh	EGA/VGA
14	03C0h-03CFh	CGA CRT 暫存器
15	03D4h-03D9h	Floppy Diskette
16	03F0h-03F7h	Primary IDE
17	03F6h-03F6h	COM_1 (If use)
18	03F8h-03FFh	South Bridge SMB
19	0400h-041F	IRQ Edge/level control ports
20	04D0h-04D1h	South Bridge GPIO
21	0500h-053Fh	ACPI
22	0800h-087Fh	PME
23	0A00h-0A07h	PCI Configuration address
24	0CF8h	PCI Configuration Data
25	0CFCh	
26		
27		
28		
29		
30		

4.2 IRQ Map

Item	IRQ	Description
1	IRQ_0	System Timer
2	IRQ_1	Keyboard Controller
3	IRQ_2	VGA and Link to Secondary PIC
4	IRQ_3	COM 2
5	IRQ_4	COM 1
6	IRQ_5	PCI Device
7	IRQ_6	Floppy Controller
8	IRQ_7	Parallel Port
9	IRQ_8	CMOS/RTC Timer
10	IRQ_9	ACPI
11	IRQ_10	PCI Device
12	IRQ_11	PCI Device
13	IRQ_12	PS/2 Mouse
14	IRQ_13	FPU exception
15	IRQ_14	IDE Controller
16	IRQ_15	PCI Express Controller

4.3 Example of Watch Dog codes

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <windows.h>

struct product {
 unsigned char vendorid;
 unsigned int boardid;
 char *name;
 unsigned char watchdogid;
 unsigned char gpioid;
 unsigned char eepromid;
 unsigned char hardwaremonitorid;
};
```

```
struct product myproduct = {1, 0, "ITX-7415", 2, 3, 1, 1};
int main(void) {
      typedef int (*DLLPROC)(ARGS);
      DLLPROC BoardInit;
      DLLPROC BoardClose;
      DLLPROC WatchdogStart;
      DLLPROC WatchdogStop;
      HMODULE lib;
      lib = LoadLibrary("libarborpu-0.dll");
      if (!lib){
      fprintf(stderr,"Could not find the Arbor Platform Utilities Library ... \N");
      exit(0);
       }
      BoardInit = (DLLPROC) GetProcAddress(lib, "BoardInit");
      WatchdogStart = (DLLPROC) GetProcAddress(lib, "WatchdogStart");
      WatchdogStop = (DLLPROC) GetProcAddress(lib, "WatchdogStop");
      BoardClose = (DLLPROC) GetProcAddress(lib, "BoardClose");

 /* Initialize Arbor Board */
BoardInit(&myproduct);
 WatchdogStart(10);
  /* Close Arbor Board */
  BoardClose();
}
```